REMARKS

Claims 1, 7, 13, 19, 25 and 31 have been amended to further define the isocyanate-reactive component and to incorporate the subject matter of Claims 6, 12, 18, 24, 30 and 36, respectively, into the amended claims. Support for the amendment which defines the isocyanate-reactive component as a polyether polyol having an equivalent weight of less than 200 and a functionality of 2 to 8 can be found on page 12, lines 2-3 and as a compound having a molecular weight of from 105 to 400 and an equivalent weight of from about 31 to less than about 100 and containing from 2 to 4 hydroxyl groups can be found on page 12, lines 7-9.

Claims 6, 12, 18, 24, 30 and 36 have been cancelled as the subject matter of these claims has been incorporated into the respective independent claims.

The amendments to Claims 3, 9, 15, 21, 27 and 33 serve to correct an inadvertent typographical error.

Applicants respectfully submit that no new matter has been added by the preceding amendment.

Claims 1-36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Wynnyk et al reference (U.S. Published Application 2004/0016276) in view of the Moore reference (U.S. Patent 4,804,403).

U.S. Published Application 2004/0016276 (Wynnyk et al) is directed to a controlled release fertilizer having improved mechanical handling durability and to a method for the production of this controlled release fertilizer. The controlled release fertilizer comprises a particulate plant nutrient surrounded by a protective coating which comprises a particulate filler. In addition, it is preferred that there is a release control coating beneath the protective coating to provide the controlled release properties. The release control coating and the protective coating may be the same or different, and when the same, one coating functions to provide both the controlled release properties and the protective properties.

The Moore reference (U.S. Patent 4,804,403) described attrition-resistant, controlled release fertilizers. These fertilizers comprise a water soluble mass which contains nucleophilic reactive functional groups surrounded and chemically bonded to a base coating and a water-insoluble layer which surrounds and chemically bonds

to/with the base coating. The base coating is formed by reacting a molecular excess of coupling agent with the nucleophilic groups of the central particles. The water-insoluble layer is formed by reaction and polymerization with/to the excess functional groups of the coupling agent. See column 2, lines 48-63. Suitable coupling agents for the base layer include isocyanates, particularly when the nucleophilic functional groups of the central mass are NH_2 groups (column 2, line 65 through column 3, line 5). Polyols are suitable materials for the sealing layer as these chemically bond with the isocyanate groups of the coupling agent to form a sealing layer (column 3, lines 6-15).

Applicants respectfully submit that the presently claimed invention is not rendered obvious by the Wynnyk et al reference in view of the Moore reference.

The Wynnyk et al reference discloses the controlled release fertilizer materials comprise a particulate plant nutrient surrounds by a protective coating which comprises the particulate filler, and preferably a release control coating beneath the protective coating to provide the desired controlled release properties of the fertilizer. The protective coating and the release control coating may be the same or different. Polyurethane type protective coatings are preferred. The addition of the particulate material(s) to a polyol (castor oil, oleo polyol, etc.) or mixture thereof which is reacted with an isocyanate or mixture of isocyanates produces a coating that is less susceptible to damage during mechanical handling of the fertilizer. It further discloses that the particulate material may be added to the isocyanate or to a mixture of polyol(s) and isocyanate(s), or in conjunction with other non-reactive materials which modify the release profile. Other such materials include wax, petroleum oil, bitumen, coal products, natural oils, pulp and paper products, etc, which are premixed with the polyol. (See page 2, paragraph 0020 of the Wynnyk et al reference).

It is readily apparent from the working examples of this reference that the particulate filler is added to the polyol component and then applied simultaneously with the isocyanate component to the particulate plant nutrient (i.e. urea). Examples 1 and 2 of the Wynnyk et al reference are comparative examples which do not contain a particulate filler. Examples 3-6 are representative of the invention of the Wynnyk et al reference.

Example 1 coats fertilizer material simultaneously with castor oil (polyol) and polymeric diphenylmethane diisocyanate, in three equal layers, followed by a single application of a C_{30+} alpha olefin wax to the urethane coated fertilizer. The water release rate profile is shown in Figure 1. Example 2 coats the fertilizer material simultaneously with a mixture of a C_{30+} alpha olefin wax in castor oil and isocyanate in three equal layers, followed by a single application of a C_{30+} alpha olefin wax as an overcoat layer. Figure 2 shows the water release rate profile for Example 2.

By comparison, Example 3 coats urea fertilizer particles simultaneously with a C_{30+} alpha olefin wax in castor oil and isocyanate to form two layers, and then forms two additional layers by applying a mixture of urea dust in castor oil and an isocyanate. Example 4 simultaneously coats urea fertilizer particles with a mixture of pea starch, a C_{30+} alpha olefin wax and castor oil, and isocyanate. Two additional layers of the same composition are applied. In Example 5, the coating on the fertilizer particles is formed by simultaneously applying a mixture of phospho-gypsum with a C_{30+} alpha olefin wax and castor oil, and isocyanate, in four identical layers. The coating on the fertilizer particles in Example 6 is formed by simultaneously applying a mixture of phosphate rock dust in a C_{30+} alpha olefin wax and castor oil, with isocyanate. Three identical layers are then applied.

Applicants respectfully submit that the Wynnyk et al reference clearly leads the skilled artisan to conclude that any filler, inert or otherwise, should first be mixed or blended with the polyol component (or isocyanate) and this blend should be simultaneously applied with the isocyanate (or polyol component) to the fertilizer particles. It is evident from the present claim language that Applicants' claimed invention requires each of the components (polyol, isocyanate and filler) to be applied separately as individual components to the fertilizer particles. Furthermore, the working examples of the present application illustrate that blending the filler with the polyol component and/or with the isocyanate component results in blends which were thick pastes and not usable or suitable for applying as a coating to fertilizer particles.

This is clearly contrary to the disclosure of the Wynnyk et al reference which leads one of ordinary skill in the art to conclude that fillers are first mixed or blended with the polyol component and/or the isocyanate component prior to being applied to

fertilizer particles. One of ordinary skill in the art has no insight into the presently claimed invention from the Wynnyk et al reference. There is no information in this reference which leads the skilled artisan to expect or conclude that the presently required polyol components and inert fillers are suitable for preparing coated fertilizer particles in light of the fact that these form thick pastes when pre-mixed as described in the working examples therein.

Combining the Moore reference (U.S. 4,804,403) with the Wynnyk et al reference also does not provide any insight into the presently claimed invention.

The Moore reference discloses that inert powders such as wollastonite, lime, silica, dolomite and rouge may be used as diluent fillers (column 8, lines 3-4). It also discloses that finely divided plant nutrients, i.e. micronutrients, may be used as diluent fillers in the sealing layer and/or water-soluble coatings therein. Suitable micronutrients include oxides and sulfates of zinc, copper, manganese and iron. See column 8, lines 9-15. It also discloses that agricultural chemicals which affect the performance of plant growth may be included in finely divided form as diluent fillers. Such agricultural chemicals include herbicides, hexazinone, 2,4-D and atrazine (see column 8, lines 16-22). None of the working examples of the Moore reference contain a diluent filler. Thus, one skilled in the art upon combining the Wynnyk et al reference with the Moore reference would, at best, combine one of the diluent fillers from the Moore reference with the polyol component and/or isocyanate component as described in the examples of the Wynnyk et al reference. This, however, is not the presently claimed invention.

In fact, as discussed above, such a combination of fillers and polyols or of fillers and isocyanates results in thick pastes which are not suitable for coating fertilizer particles. See examples 7, 11, 13 and 15 of the present application. Applicants respectfully submit that the combination of the Wynnyk et al reference and the Moore reference does not fairly suggest the presently claimed invention to one of ordinary skill in the art. Only after reading the present application does it become obvious to proceed in the manner required by the present claim language. Such a perspective does not, however, provide a proper basis for a rejection under 35 U.S.C. § 103(a).

Applicants therefore submit that this rejection is in error and request that it be withdrawn.

It is respectfully requested that the present application be reconsidered in view of the preceding amendments and remarks. The allowance of Claims 1-5, 7-11, 13-17, 19-23, 25-29 and 31-35 is respectfully requested.

Respectfully Submitted,

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